MITSUBISHI ELECTRIC

Side B

Side A JAPANESE

Side B ENGLISH

CL1Y2-T1D2S
CC-Link/LT Remote I/O Module

Please read this manual thoroughly before starting to use the product and handle the product properly.

User's Manual

CC-Link/LT

MODEL	CL1Y2-T1D2S
MANUAL Number	JY997D04001H
Date	April 2015

●SAFETY PRECAUTIONS●

(Read these precautions before using)

Please read this manual carefully and pay special attention to safely in order to handle this product properly. Also pay careful attention to safely and handle the module properly.
These precautions apply only to Mitsubishi equipment. Refer to the user's manual of the CPU module to use for a description of the PLC system safety precautions.
These ●SAFETY PRECAUTIONS● classify the safety precautions into two categories: "WARNING" and "CAUTION".

⚠WARNING	Procedures which may lead to a dangerous condition and cause death or serious injury if not carried out properly.
⚠CAUTION	Procedures which may lead to a dangerous condition and cause superficial to medium injury, or physical damage only, if not carried out properly.

Depending on circumstances, procedures indicated by ⚠CAUTION may also be linked to serious results.
In any case, it is important to follow the directions for usage.
Store this manual in a safe place so that you can take it out and read it whenever necessary. Always forward it to the end user.

[DESIGN PRECAUTIONS]

⚠WARNING

- Configure an interlock circuit in a sequence program so that the system operates on the safety side using the communication status information in the event the data link falls into a communication problem. Otherwise, erroneous output and malfunction may result in accidents.
- Remote input and output can not be switched ON or OFF when a problem occurs in the remote I/O modules. Therefore build an external monitoring circuit that will monitor any input signals that could cause a serious accident.

⚠CAUTION

- Do not have control cables and connection cables bundled with or placed near by the main circuit and/or power cables. Wire those cables at least 100mm(3.94 inch) away from the main circuit and/or power cables. It may cause malfunction due to noise interference.
- Use the module in the status in which any force is not applied on the module, flat cables dedicated to CC-Link/LT and flat cables for I/O. If a force is applied, wire breakage or failure may be caused.

[INSTALLATION PRECAUTIONS]

⚠CAUTION

- Use the module in an environment that meets the general specifications contained in this manual. Using this module in an environment outside the range of the general specifications could result in electric shock, fire, erroneous operation, and damage to or deterioration of the product.
- Do not directly touch the module's conductive parts. Doing so could cause malfunction or trouble in the module.

[WIRING PRECAUTIONS]

⚠WARNING

- Perform installation and wiring after disconnecting the power supply at all phases externally. If the power is not disconnected at all phases an electric shock or product damage may result.

⚠CAUTION

- Perform correct wiring for the module according to the product's rated voltage and terminal arrangement. Connecting to a power supply different from rating or miss-wiring may cause fire, product failure or malfunction.
- Make sure foreign objects do not get inside the module, such as dirt and wire chips. It may cause fire, product failure or malfunction.
- Do not short-circuit the 24G and +24V terminals. It may result in fire, product failure or malfunction.
- Attach a warning label (hazard symbol 417-IEC-5036) concerning the electric shock to the location.

[STARTING AND MAINTENANCE PRECAUTIONS]

⚠WARNING

- Do not touch the terminals when the power is ON. It may cause an electric shock or malfunction.
- Perform cleaning the module after turning OFF the all external power supply for sure. Failure to do so may cause failure or malfunction of the modules.

⚠CAUTION

- Do not disassemble or modify the module. Doing so may cause failure, malfunction, injury, or fire.
- The module case is made of resin; do not drop it or subject it to strong shock. A module damage may result.
- Make sure to switch all phases of the external power supply OFF before installing or removing the module to/from the panel. Failure to do so may cause failure or malfunction of the modules.

[DISPOSAL PRECAUTIONS]

⚠CAUTION

- When disposing of this product, treat it as industrial waste.

[TRANSPORTATION AND MAINTENANCE PRECAUTIONS]

⚠CAUTION

- During transportation avoid any impact as the module is a precision instrument. Doing so could cause trouble in the module.
- If is necessary to check the operation of module after transportation, in case of any impact damage.

●Notification of CE marking●

This notification does not guarantee that an entire mechanical module produced in accordance with the contents of the notification comply with the following standards. Compliance to EMC standards of the entire mechanical module should be checked by the user / manufacturer.

Attention

- This product is designed for use in industrial applications.

Note

- Authorized Representative in the European Community:
  Mitsubishi Electric Europe B.V.
  Gothaer Str. 8, 40880 Ratingen, Germany

Standards with which this product complies

Type : Programmable Controller (Open Type Equipment) Remote I/O module
Models : Products manufactured:
from November 1st, 2002 to April 30th, 2006 are compliant with EN61000-6-4 and EN61131-2:1994+A11:1996+A12:2000
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Electromagnetic Compatibility Standards (EMC)	Remark
EN61000-6-4:2001 Electromagnetic compatibility -Generic standards - Emission standard for Industrial environment	Compliance with all relevant aspects of the standard. (Radiated Emissions and Mains Terminal Voltage Emissions)
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For more details please contact the local Mitsubishi Electric sales site.

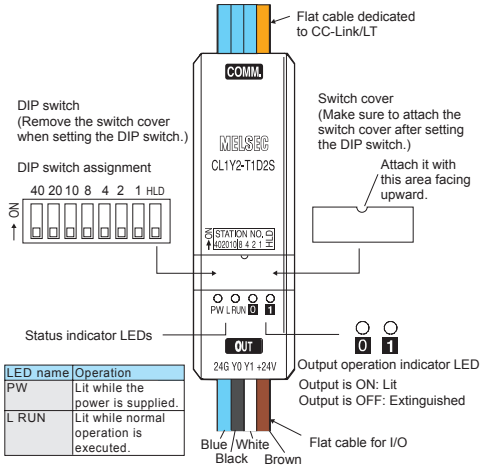
- Notes for compliance to EMC regulation.
  It is necessary to install the CL1 series module in a shielded metal control panel.
- Use this product in Zone A*1 as defined in EN61131-2.

*1 Zone defined in EN61131-2
Separation defined in EN61131-2 for EMC LVD regulation decided depending on condition in industrial setting.
Zone C = Factory mains which is isolated from public mains by dedicated transformers.
Zone B = Dedicated power distribution which is protected by secondary surge protection. (300V or less in the rated voltage is assumed.)
Zone A = Local power distribution which is isolated from dedicated power distribution by AC/DC converters, isolation transformers, etc. (120V or less in the rated voltage is assumed.)

1. Outline of Product

This product is a cable type output module connected to CC-Link/LT.
This product has two output points (transistor output).

2. Name and Setting of Each Part



LED name	Operation
PW	Lit while the power is supplied.
L RUN	Lit while normal operation is executed.

Name		Description
Status indicator LED	PW	ON while the power is supplied.
	L RUN	ON while normal operation is executed.
Output operation indicator LED		ON while the output is ON. Extinguished while the output is OFF. ○ 0 Y0 output operation indicator LED ○ 1 Y1 output operation indicator LED
Flat cable dedicated to CC-Link/LT	24G	Connector for CC-Link/LT communication line/ module power supply
	DB	
	DA	
	+24V	
Flat cable for I/O	Blue	24G
	Black	Y0
	White	Y1
	Brown	+24V

Name	Description
DIP switch	Set the 10's digit of the station No. using "STATION NO. 10", "STATION NO. 20" and "STATION NO. 40". Set the 1's digit of the station No. using "STATION NO. 1", "STATION NO. 2", "STATION NO. 4" and "STATION NO. 8". Factory default = All bits are OFF Make sure to set the station No. in the range from 1 to 64. Example: When setting the station No. to "32", set the DIP switch as follows.

Station No.	10's digit			1's digit			
	40	20	10	8	4	2	1
32	OFF	ON	ON	OFF	OFF	ON	OFF

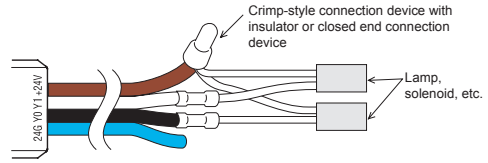
HLD	Holds the output (when an error has occurred). ON: Holds the output. OFF: Clears the output.

3. Cautions on Handling

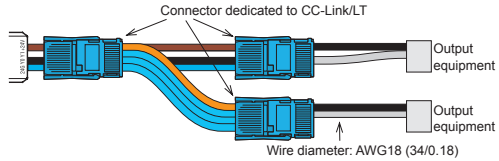
3.1 Handling of flat cable for I/O

The cable length from the module to a sensor shall be within 3m(9'10"). Measure the cable outside the module, and confirm that the driving voltage for the used sensor is assured.

- Output

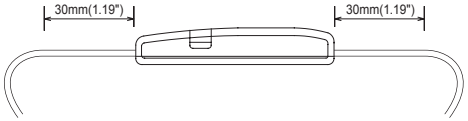


If the diameter of the output equipment connection cable is equivalent to the diameter of the flat cable for I/O of this module, connectors dedicated to CC-Link/LT can be used for connection.



3.2 Handling of cable

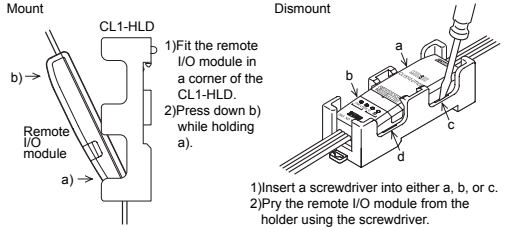
Do not bend the cable within 30mm(1.19") from the module.



Use a crimp-style terminal in a status in which no force is applied on the cable.

3.3 Mounting with the CL1-HLD (module holder)

Refer to the figures below for details on mounting or removing the remote I/O module when used with the CL1-HLD.

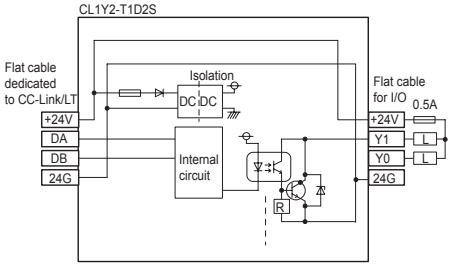


4. Wiring

4.1 External wiring

The output terminals of the CL1Y2-T1D2S operate while using the power supplied from the interface.
The output wiring is fixed to the sink output.

Output wiring



5. Specifications

5.1 General specifications

Item	Specification			
Ambient working temperature	0 to 55°C (32 to 131°F)			
Ambient storage temperature	-25 to 75°C (-13 to 167°F)			
Ambient operating humidity	5 to 95%RH: Dew condensation shall not be considered.			
Ambient storage humidity	5 to 95%RH: Dew condensation shall not be considered.			
Vibration resistance (*1)	When intermittent vibration is present			Number of times of sweep
	Frequency	Acceleration	Half amplitude	10 times in each of X, Y and Z directions (for 80 min)
	10 to 57Hz	–	0.075mm	
	57 to 150Hz	9.8m/s^2	–	
	When continuous vibration is present			
	Frequency	Acceleration	Half amplitude	
	10 to 57Hz	–	0.035mm	
	57 to 150Hz	4.9m/s^2	–	
Impact resistance (*1)	147 m/s^2, 3 times in each of X, Y and Z directions			
Operating atmosphere	Corrosive gas shall not be present.			
Operating altitude	2,000m(6561'8") or less (*2)			
Installation place	Inside control panel (*3)			
Over-voltage category	II or less (*4)			
Degree of contamination	2 or less (*5)			

Notes:

*1 The criterion is shown in IEC61131-2.

*2 The module cannot be used in an environment pressurized above the atmospheric pressure which can be generated around the altitude of 0 m. If the module is used in such an environment, it may fail.

*3 The module can be used in any environment even outside the control panel as far as the requirements of the ambient operating temperature, the ambient operating humidity, etc. are satisfied.

*4 This indicates the section of the power supply to which the equipment is assumed to be connected between the public electrical power distribution network and the machinery within premises. Category II applies to equipment for which electrical power is supplied from fixed facilities.
The surge voltage withstand level for up to the rated voltage of 300V is 2500V.

*5 This index indicates the degree of conductive generating substances in the environment in which the module is used. The degree of contamination 2 indicates that contamination is caused by generation of only non-conductive substances.
In this degree, however, temporary conduction may be caused by accidental condensation.

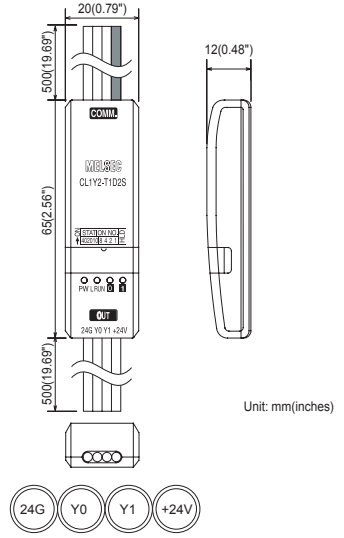
5.2 Output specifications

Item		Specification
Output method		Transistor output (using module power supply in common) (sink)
Number of outputs		2 points
Isolation method		Isolation with photocoupler
Rated load voltage		24V DC
Operating load voltage range		Same as module power supply
Max. load current		0.1A/point 0.2 A/1 common
Max. inrush current		0.4A/10 ms
Leakage current at OFF		0.1mA or less/30V DC
Max. voltage drop at ON		1V or less (max.)/0.1A
Response time	OFF→ON	1.0ms or less
	ON→OFF	1.0ms or less
Surge suppression		Zener diode
Common wiring method		2 point/1 common (1 point)
Internal protection for outputs		Internal protection circuit none Please connect the fuse in the connected load outside.

5.3 Performance specifications

Item		Specification
Module power supply	Voltage	20.4 to 28.8V DC (24V DC -15% to +20%) Ripple ratio: Within 5%
	Current consumption	40mA (when all points are ON)
	Initial current	70mA
	Max. allowable momentary power failure period	PS1:1ms
Number of stations occupied		4-, 8- or 16-point mode: 1 station
Noise durability		500Vp-p Noise width: 1μs Cycle: 25 to 60 Hz (by noise simulator)
Withstand voltage		500V AC for 1 min
Isolation resistance		10 MΩ or more between primary area (external DC terminal) and secondary area (internal circuit) by 500V DC megger
Protection class		IP2X
I/O part connection method		Connection with cable
Module installation method		Can be installed in six directions
Flat cable for I/O (wire diameter)		AWG18 (34/0.18)
Mass (weight)		0.07 kg (0.15 lbs) (including 500mm(19.69") flat cable dedicated to CC-Link/LT and 500mm(19.69") flat cable for I/O)

6. Outside Dimensions



This manual confers no industrial property rights or any rights of any other kind, nor does it confer any patent licenses. Mitsubishi Electric Corporation cannot be held responsible for any problems involving industrial property rights which may occur as a result of using the contents noted in this manual.

Warranty
Mitsubishi will not be held liable for damage caused by factors found not to be the cause of Mitsubishi; machine damage or lost profits caused by faults in the Mitsubishi products; damage, secondary damage, accident compensation caused by special factors unpredictable by Mitsubishi; damages to products other than Mitsubishi products; and to other duties.

⚠For safe use
- This product has been manufactured as a general-purpose part for general industries, and has not been designed or manufactured to be incorporated in a device or system used in purposes related to human life.
- Before using the product for special purposes such as nuclear power, electric power, aerospace, medicine or passenger movement vehicles, consult with Mitsubishi.
- This product has been manufactured under strict quality control. However when installing the product where major accidents or losses could occur if the product fails, install appropriate backup or failsafe functions in the system.

Country/Region	Sales office/Tel
USA	Mitsubishi Electric Automation Inc. 500 Corporate Woods Parkway, Vernon Hills, IL 60061, USA Tel : +1-847-478-2100
Brazil	MELCO-TEC Representacao Comercial e Assessoria Tecnica Ltda. Av. Paulista, 1439, cj74, Bela Vista, Sao Paulo CEP: 01311-200-SP Brazil Tel : +55-11-3146-2200
Germany	Mitsubishi Electric Europe B.V. German Branch Gothaer Strasse 8, D-40880 Ratingen, Germany Tel : +49-2102-486-0
UK	Mitsubishi Electric Europe B.V. UK Branch Travellers Lane, Hatfield, Hertfordshire, AL10 8XB, UK. Tel : +44-1707-27-6100
Italy	Mitsubishi Electric Europe B.V. Italian Branch Viale Colleoni 7-20864 Agrate Brianza (Milano), Italy Tel : +39-039-60531
Spain	Mitsubishi Electric Europe B.V. Spanish Branch Carretera de Rubi 76-80.AC.420, E-08190 Sant Cugat del Valles (Barcelona), Spain Tel : +34-93-565-3131
France	Mitsubishi Electric Europe B.V. French Branch 25, Boulevard des Bouvets, F-92741 Nanterre Cedex, France Tel : +33-1-5568-5568
Czech Republic	Mitsubishi Electric Europe B.V.-o.s.Czech office Avenir Business Park, Radicka 751/113e, 158 00 Praha5, Czech Republic Tel : +420-251-551-470
Poland	Mitsubishi Electric Europe B.V. Polish Branch ul. Krakowska 50, 32-083 Balice, Poland Tel : +48-12-630-47-00
Russia	Mitsubishi Electric Europe B.V. Russian Branch St.Petersburg office Piskarevsky pr. 2, bld 2, lit "Sch", BC "Benua", office 720; 195027, St. Petersburg, Russia Tel : +7-812-633-3497

Country/Region	Sales office/Tel
South Africa	CBI-Electric. Private Bag 2016, ZA-1600 Isando, South Africa Tel : +27-11-977-0770
China	Mitsubishi Electric Automation (China) Ltd. No.1386 Hongqiao Road, Mitsubishi Electric Automation Center, Changning District, Shanghai, China Tel : +86-21-2322-3030
Taiwan	Setsuyo Enterprise Co., Ltd. 6F., No.105, Wugong 3rd Road, Wugu District, New Taipei City 24889, Taiwan, R.O.C. Tel : +886-2-2299-2499
Korea	Mitsubishi Electric Automation Korea Co., Ltd. 3F, 1480-6, Gayang-Dong, Gangseo-Gu, Seoul, 157-200, Korea Tel : +82-2-3660-9530
Singapore	Mitsubishi Electric Asia Pte, Ltd. Industrial Division 307, Alexandra Road, Mitsubishi Electric Building, Singapore, 159943 Tel : +65-6470-2308
Thailand	Mitsubishi Electric Automation (Thailand) Co., Ltd. Bang-Chan Industrial Estate No.111 Soi Serithai 54, T.Kannayao, A.Kannayao, Bangkok 10230 Thailand Tel : +66-2906-3238
Indonesia	P. T. Autoteknindo Sumber Makmur Muara Karang Selatan, Block A / Utara No.1 Kav. No. 11, Kawasan Industri Pergudangan, Jakarta-Utara 14440, P.O. Box 5045, Indonesia Tel : +62-21-663-0833
India	Mitsubishi Electric India Pvt. Ltd. 2nd Floor, Tower A & B, Cyber Greens, DLF Cyber City, DLF Phase-III, Gurgaon-122002 Haryana, India Tel : +91-124-463-0300
Australia	Mitsubishi Electric Australia Pty. Ltd. 348 Victoria Road PO BOX11, Rydalmere, N.S.W 2116, Australia Tel : +61-2-9684-7777

MITSUBISHI ELECTRIC CORPORATION
HEAD OFFICE : TOKYO BUILDING, 2-7-3 MARUNOUCHI, CHIYODA-KU, TOKYO 100-8310, JAPAN

When exported from Japan, this manual does not require application to the Ministry of Economy, Trade and Industry for service transaction permission.

Specifications subject to change without notice.

MITSUBISHI ELECTRIC

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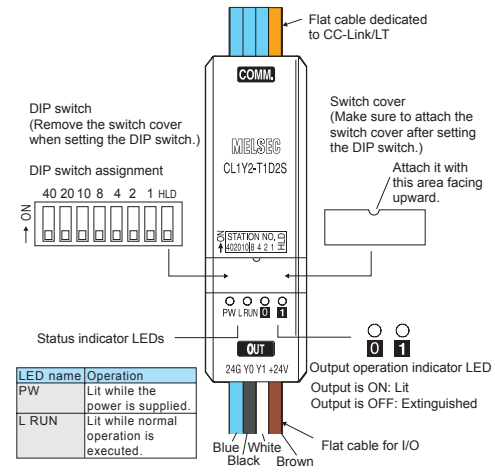

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	Brown	+24V

Name	Description
DIP switch	Set the 10's digit of the station No. using "STATION NO. 10", "STATION NO. 20" and "STATION NO. 40". Set the 1's digit of the station No. using "STATION NO. 1", "STATION NO. 2", "STATION NO. 4" and "STATION NO. 8". Factory default = All bits are OFF Make sure to set the station No. in the range from 1 to 64. Example: When setting the station No. to "32", set the DIP switch as follows.

Station No.	10's digit			1's digit			
	40	20	10	8	4	2	1
32	OFF	ON	ON	OFF	OFF	ON	OFF

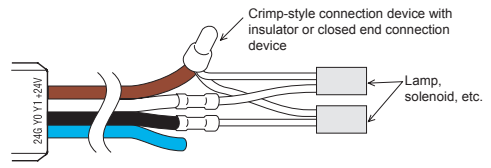
HLD	Holds the output (when an error has occurred). ON: Holds the output. OFF: Clears the output.

3. Cautions on Handling

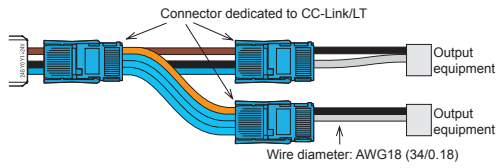
3.1 Handling of flat cable for I/O

The cable length from the module to a sensor shall be within 3m(9'10"). Measure the cable outside the module, and confirm that the driving voltage for the used sensor is assured.

- Output

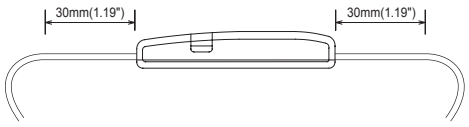


If the diameter of the output equipment connection cable is equivalent to the diameter of the flat cable for I/O of this module, connectors dedicated to CC-Link/LT can be used for connection.



3.2 Handling of cable

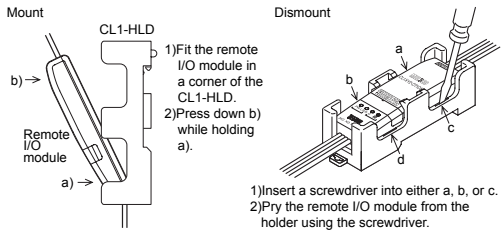
Do not bend the cable within 30mm(1.19") from the module.



Use a crimp-style terminal in a status in which no force is applied on the cable.

3.3 Mounting with the CL1-HLD (module holder)

Refer to the figures below for details on mounting or removing the remote I/O module when used with the CL1-HLD.

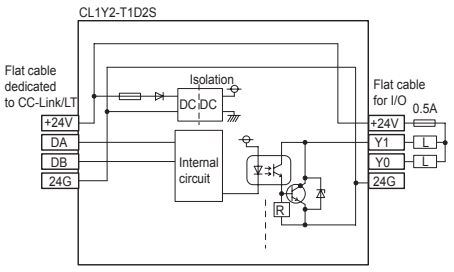


4. Wiring

4.1 External wiring

The output terminals of the CL1Y2-T1D2S operate while using the power supplied from the interface.
The output wiring is fixed to the sink output.

Output wiring



5. Specifications

5.1 General specifications

Item	Specification			
Ambient working temperature	0 to 55°C (32 to 131°F)			
Ambient storage temperature	-25 to 75°C (-13 to 167°F)			
Ambient operating humidity	5 to 95%RH: Dew condensation shall not be considered.			
Ambient storage humidity	5 to 95%RH: Dew condensation shall not be considered.			
Vibration resistance (*1)	When intermittent vibration is present			Number of times of sweep
	Frequency	Acceleration	Half amplitude	10 times in each of X, Y and Z directions (for 80 min)
	10 to 57Hz	–	0.075mm	
	57 to 150Hz	9.8m/s²	–	
	When continuous vibration is present			
	Frequency	Acceleration	Half amplitude	
	10 to 57Hz	–	0.035mm	
	57 to 150Hz	4.9m/s²	–	
Impact resistance (*1)	147 m/s², 3 times in each of X, Y and Z directions			
Operating atmosphere	Corrosive gas shall not be present.			
Operating altitude	2,000m(6561'8") or less (*2)			
Installation place	Inside control panel (*3)			
Over-voltage category	II or less (*4)			
Degree of contamination	2 or less (*5)			

Notes:

*1 The criterion is shown in IEC61131-2.

*2 The module cannot be used in an environment pressurized above the atmospheric pressure which can be generated around the altitude of 0 m. If the module is used in such an environment, it may fail.

*3 The module can be used in any environment even outside the control panel as far as the requirements of the ambient operating temperature, the ambient operating humidity, etc. are satisfied.

*4 This indicates the section of the power supply to which the equipment is assumed to be connected between the public electrical power distribution network and the machinery within premises. Category II applies to equipment for which electrical power is supplied from fixed facilities.
The surge voltage withstand level for up to the rated voltage of 300V is 2500V.

*5 This index indicates the degree of conductive generating substances in the environment in which the module is used. The degree of contamination 2 indicates that contamination is caused by generation of only non-conductive substances.
In this degree, however, temporary conduction may be caused by accidental condensation.

5.2 Output specifications

Item		Specification
Output method		Transistor output (using module power supply in common) (sink)
Number of outputs		2 points
Isolation method		Isolation with photocoupler
Rated load voltage		24V DC
Operating load voltage range		Same as module power supply
Max. load current		0.1A/point 0.2 A/1 common
Max. inrush current		0.4A/10 ms
Leakage current at OFF		0.1mA or less/30V DC
Max. voltage drop at ON		1V or less (max.)/0.1A
Response time	OFF→ON	1.0ms or less
	ON→OFF	1.0ms or less
Surge suppression		Zener diode
Common wiring method		2 point/1 common (1 point)
Internal protection for outputs		Internal protection circuit none Please connect the fuse in the connected load outside.

5.3 Performance specifications

Item		Specification
Module power supply	Voltage	20.4 to 28.8V DC (24V DC -15% to +20%) Ripple ratio: Within 5%
	Current consumption	40mA (when all points are ON)
	Initial current	70mA
	Max. allowable momentary power failure period	PS1:1ms
Number of stations occupied		4-, 8- or 16-point mode: 1 station
Noise durability		500Vp-p Noise width: 1μs Cycle: 25 to 60 Hz (by noise simulator)
Withstand voltage		500V AC for 1 min
Isolation resistance		10 MΩ or more between primary area (external DC terminal) and secondary area (internal circuit) by 500V DC megger
Protection class		IP2X
I/O part connection method		Connection with cable
Module installation method		Can be installed in six directions
Flat cable for I/O (wire diameter)		AWG18 (34/0.18)
Mass (weight)		0.07 kg (0.15 lbs) (including 500mm(19.69") flat cable dedicated to CC-Link/LT and 500mm(19.69") flat cable for I/O)

6. Outside Dimensions

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⚠For safe use

- This product has been manufactured as a general-purpose part for general industries, and has not been designed or manufactured to be incorporated in a device or system used in purposes related to human life.
- Before using the product for special purposes such as nuclear power, electric power, aerospace, medicine or passenger movement vehicles, consult with Mitsubishi.
- This product has been manufactured under strict quality control. However when installing the product where major accidents or losses could occur if the product fails, install appropriate backup or failsafe functions in the system.

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Specifications subject to change without notice.